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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,531	08/17/2001	Douglas W. Akers	B-124	4276

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EXAMINER

PALABRICA, RICARDO J

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 09/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/932,531

Applicant(s)

AKERS, DOUGLAS W.

Examiner

Rick Palabrica

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7, 8, 20-24, 26-28 and 30-40 is/are pending in the application.
- 4a) Of the above claim(s) 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7, 8, 20-24, 26-28 and 30-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114.

Applicant's submission filed on 6/20/05 has been entered. This submission traversed the rejection of claims in the 3/22/05 Final Office action and added new claims 37-40.

2. Applicant traversed the rejection of claims 20-24 and 26-28 under 35 U.S.C. 112, first and second paragraphs on the ground that these rejections are identical to those reversed by Board of Patent Appeals and Interferences for the divisional application, 10/269,807. Based on this, Applicant then asserts that said claims are allowable in the light of section 112, first and second paragraphs. The Examiner disagrees.

First, the Board for the divisional application clearly stated that its opinion in support of the 5/31/05 decision "is not binding precedent of the Board." Second, there are new issues by way of new documents presented herein that the Board did not and could not have considered in its decision. These documents are examples of prior art that provide basis for cogent reasoning as to why Applicant's disclosure would not have

enabled a person having ordinary skill in the art to employ various algorithms claimed by the Applicant without undue experimentation.

Derlet et al. (Journal of Materials Science Letters 15 (1996)) teaches positron annihilation lifetime spectroscopy that provides a non-destructive examination of silicon by identification of impurity concentrations and types. They teach that there is not one unique but a plurality of lifetime fitting algorithms for analysis, i.e., a discrete lifetime algorithm and a continuous lifetime algorithm. They state that different investigators (i.e., Itoh et al. and Dannefaer et al.) obtained different degrees of accuracy ("fit") even when applying the same discrete lifetime algorithm for the same material (see col.1, 2nd paragraph, page 1949). Both of these two investigators had to perform a plurality of trials to obtain what they consider as satisfactory fit. Even the continuous lifetime algorithm, applied by Derlet et al. because of its advantages over the discrete algorithm, requires multiple trials on selected parameters and iteration before satisfactory results are obtained (e.g., see Table I and col. 1, 3rd paragraph, page 1950).

Banzuch et al. (Nuclear Instruments and Methods in Physics Research A 384 (1997)) teaches a positron annihilation method for examining defects in bulk material. They teach a plurality of algorithms for Doppler broadening, e.g., Van Cittert and Gold iterative algorithms. These algorithms require the evaluation of constants to fit a specific application, e.g., unit matrix E (see eq. 9, page 508). They teach that to apply either one of these algorithms requires multiple iterations. They teach that either one of these algorithms has advantages and disadvantages (e.g., see Conclusion section). They provide recommendation on what algorithm to apply.

Zhu et al. (Nuclear Instruments and Methods in Physics Research A284 (1989)) teach an algorithm for analysis of positron annihilation lifetime data, i.e., by computer program "SPLMOD". They teach that the accuracy of the method is subject to several sources of errors that requires more than cursory determination (e.g., see section 7, page 449).

Shaffer (University Microfilms International, 1985) discloses a characterization of defects in aluminum by Doppler broadened positron annihilation spectroscopy. He teaches that other Doppler broadened methods of solution are model dependent, require inefficient iterations and do not yield reproducible results.

These are a few examples of prior art that demonstrate that undue experimentation/trial and error is inherently required to select the best algorithm and evaluate the associated constants for the selected algorithm in a non-destructive examination of specific materials for specific material defects using photon induced positron annihilation.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

Claim 22 recites a second detector positioned adjacent the specimen being tested. None of the figures depict said detector and its positioning. Therefore, the second detector must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 3663

4. Claims 20-24, 26-28 and 30-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 20 discloses the use of Doppler broadening algorithm, claims 21 and 22 disclose a positron lifetime algorithm, claim 23 discloses a selective activation algorithm and claim 24 discloses a three-dimensional algorithm. There is neither an adequate description nor enabling disclosure of what these algorithms are, and how and in what manner these algorithms should be selected and/or modified, as necessary, in order to achieve the intended results of the process. There is neither an adequate description nor enabling disclosure as to how and in what manner one would evaluate the constants in the selected algorithm to fit Applicant's situation. The same remark also applies, for example, to claim 31 in regard to the so-called positron lifetime processor, and claims 36 and 38 in regard to the various algorithms.

See the discussion in section 2 above, which provides a basis for the rejection of claims.

In Paper No. 14, the Applicant states that several types of Doppler broadening techniques have been developed and the Doppler broadening algorithm may comprise the algorithm disclosed in U.S. Patent No. 6,178,218 B1. The Examiner reviewed this patent and found that, contrary to Applicant's allegation, "Doppler broadening algorithm" is **neither** referred to in the specification nor mentioned in the claims. As to the

Art Unit: 3663

allegation that there is a plurality of Doppler broadening techniques available, there is no support as to how one would select the appropriate technique for a specific application, and how said selected "technique" will be transformed to an "algorithm". Also, an algorithm (similar to an equation) will inherently include constants that have to be evaluated to "fit" particular conditions. There is no support as to how and in what manner said constants have to be evaluated.

A similar statement is made in Paper No. 14 and the specification regarding the plurality of available positron lifetime techniques/algorithms and three dimensional imaging techniques/algorithms. The same lack of enablement applies to these two cases.

As to the so-called "selective activation algorithm", this is another "black box". The Applicant states in Paper No. 14 that a person having ordinary skill in the art could develop such algorithm based on his level of skill coupled with an understanding of the teachings of the present invention. This statement has no probative value because it is not supported by actual proof or evidence, i.e. it constitutes no more than uncorroborative statements of the Applicant.

Applicant cited the paper "Positron Annihilation Spectroscopy" as including descriptions of these algorithms as proof that they are known in the art. The Examiner notes that the reference only discusses positron lifetime determination (e.g., equations 17 and 18 on page 610) and Doppler broadening (e.g., equation 20 on page 620). There is no discussion in the reference of the three-dimensional algorithm.

Art Unit: 3663

5. Claims 20-24, 26-28 and 30-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague, indefinite and incomplete as to how and in what manner one should select a positron lifetime, Doppler broadening algorithm or three-dimensional algorithm from a plurality of available algorithms, how to modify/manipulate the selected algorithm and how to evaluate the requisite constants in the selected algorithm to fit Appellant's situation. As presently set forth, the metes and bounds of the claims are undefined because there is a plurality of each one of these three distinct algorithms and no criteria is provided for selection of the algorithm, its modification and evaluation of requisite constants for the exercise of the claimed invention. The same remark applies to the processors associated with the respective algorithms.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by any one of Harding et al. (Nuclear Instruments and Methods in Physics Research A 398(1997)), Gilboy et al. (Appl. Radiat. Isot. Vol. 48, No. 10-12) or Tavora et al. (IEEE Transactions in Nuclear Science, Vol. 45, No. 3, June 1998).

Any one of these references discloses an apparatus for non-destructive examination by photon induced positron annihilation radiation, comprising photon source, a detector and a data processing system (see Fig. 1 or 5 in Harding, Fig. 5 in Gilboy, and Fig. 1 in Tavora).

As to the data processing system, this reads on the amplifier-electrometer configuration in Harding et al., the Pentium-based personal computer in Gilboy, and the scanner-backscattering photon counter in Tavora.

7. Claim 3 is rejected under 35 U.S.C. 102(b) as being anticipated by Harding et al. (see col. 2, Section 4.2, page 415).

8. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Tavora et al. (see col. 2, last paragraph, page 402).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference XX further illustrates prior art.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:30-5:00, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJP
September 6, 2005

A handwritten signature in black ink, appearing to read "R Palabrica". The signature is written in a cursive, flowing style.